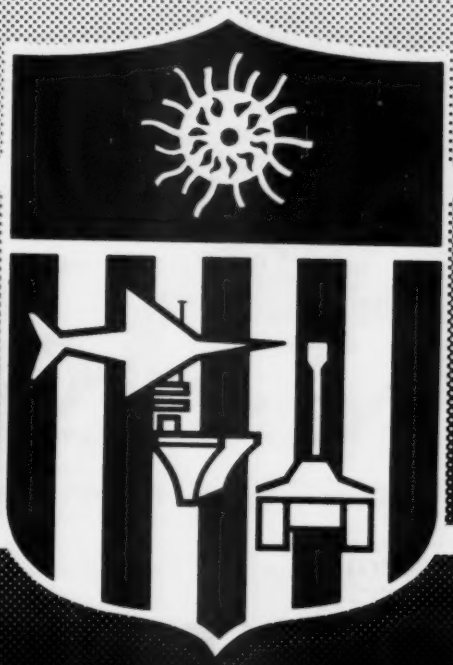
COMMANDERS DIGEST
VOL. 14, NO. 21/NOVEMBER 22, 1973

DoD Policy: ENERGY CONSERVATION

DoD AND THE ENERGY CRISIS



–pg. 2

Commanders' Conservation Checklist

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U.S. Air Force Photo

Refueling an Air Force T-39 aircraft with jet fuel at Andrews Air Force Base, Maryland.

Major Concern

Effects of Energy Problem on DoD

By
Rear Admiral N. Sonenshein, USN
Director, Defense Energy Task Group

For the last year or so, energy has been a major topic of discussion, both in this country and around the world. Limitations on new sales of natural gas, occasional brownouts in the summer, news of political maneuvering over Middle Eastern oil, the impact which environmental regulations have had on the availability of gasoline and heating oil, and the ever rising costs of energy: all these events have sparked concern over the reserves of energy which we can tap and the ability of our Nation to continue growing while at the same time preserving our hard won standard of living. Prophets of doom have predicted energy shortages which will get worse before they get better. More knowledgeable energy experts forecast spot shortages, rising energy costs and the need for more efficient use of the energy we have. In any case, there is a problem, a problem which we can and will solve by making intelligent use of the fossil fuels which we have and by moving ahead rapidly on the path to developing new energy sources.

To put the world and national energy situation in perspective, we have

to look at a few basic facts which I believe summarize the dimensions of the problem we face as a Nation. Then we will have a look at how these facts impact our energy posture in defense.

First of all, is this energy problem something new? Did we get caught by surprise? Definitely not! Energy experts in the Government and in private industry have been projecting supply constraints and rising costs in recent years. Energy consumed abroad has been, for many years, a much more expensive commodity than it has been in this country. Research on new energy sources, some of it supported by DoD, as in nuclear power, has been underway since the early fifties. However, environmental standards adopted in the last few years have added a new variable to the energy equation.

Need For Action

We have an energy problem today largely because the circumstances that had been forecast are now coming together to focus on our need:

- To adjust our consumption levels to match the available supplies of energy;
- To permit the price of energy to reflect the costs of extraction and environmental protection; and
- To improve the efficiency of ways in which we use energy to cut down on waste.

Future Energy Sources

From the broad perspective, the basic energy question may be "are the natural sources of energy we have available sufficient to meet our demands?" If we rely on fossil fuels and do not push forward with the development of nuclear, solar and geothermal sources, then the answer to this question is no! Fossil fuel reserves are, after all, finite! But today the important question is not, "are the sources available?" but "are we willing to pay the price to obtain them?"

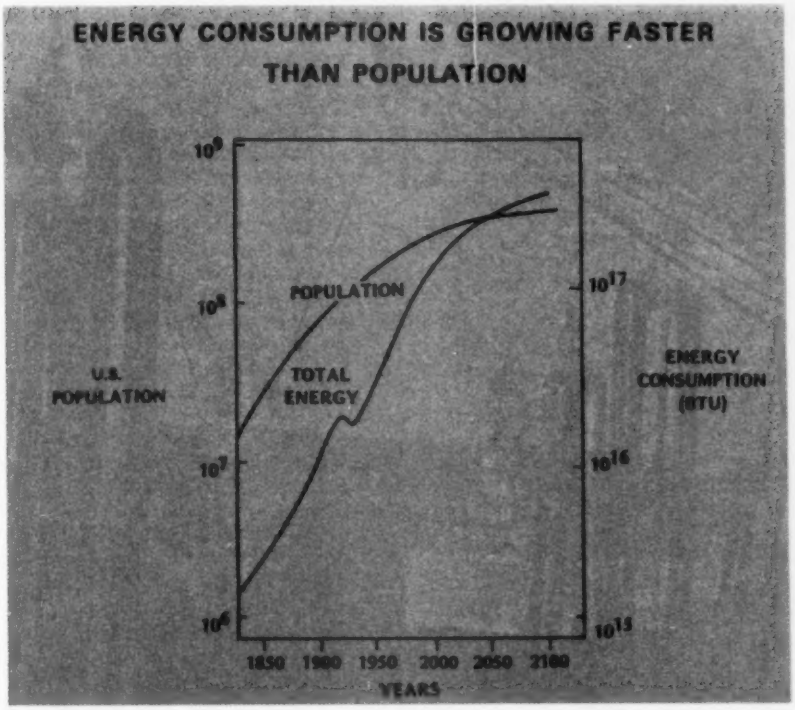

Figure 1

The energy problem in 1973 is primarily an economic problem and to solve it we need to look at both the demand and supply sides of the economic equation.

Demand for energy is going up at

Direction to Federal Agencies

"You are hereby directed to review the activities of your agency and your contractors which place demands on our energy resources and determine how demand can be reduced".

PRESIDENT RICHARD NIXON
June 29, 1973

COMMANDERS DIGEST

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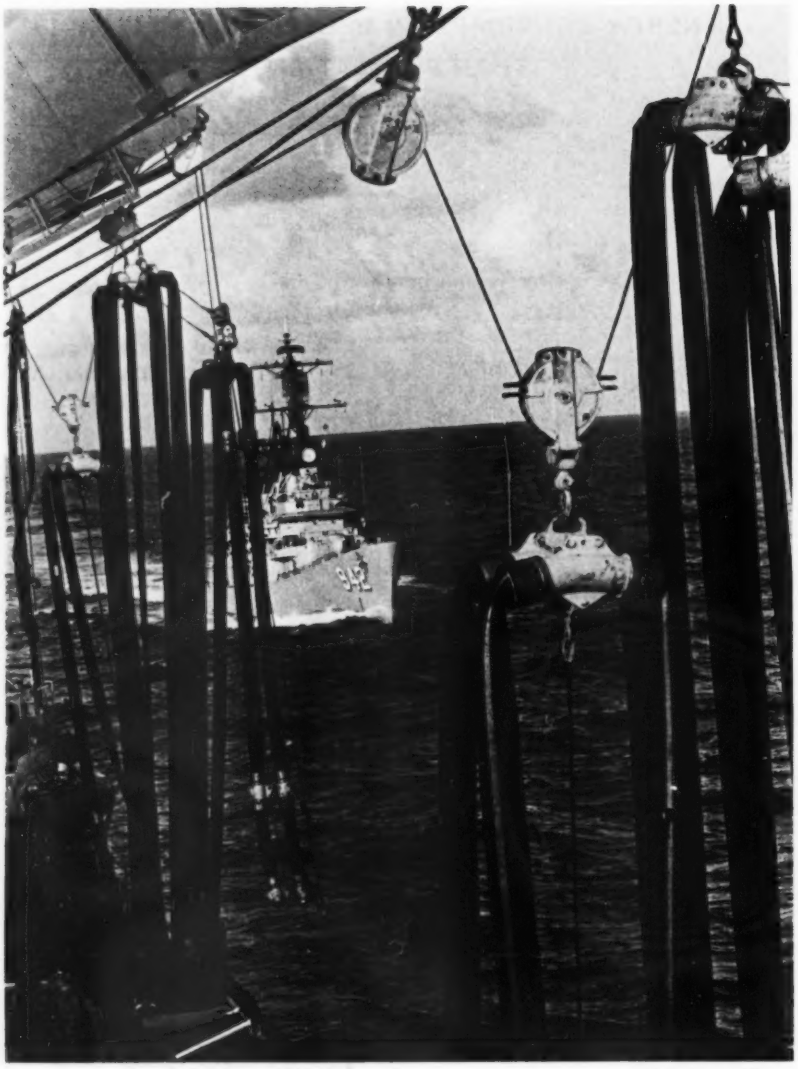

U.S. Navy Photo

REFUELING—The U.S. Navy destroyer USS Bigelow comes along side the fast combat support ship USS Seattle for replenishment during operations in the Caribbean Sea.

Deputy Secretary of Defense Clements

"In view of the critical shortage of petroleum products to meet both civilian and military needs, it is my desire that the Department of Defense, by example, demonstrate leadership in fuel conservation."

WILLIAM P. CLEMENTS, JR.
Deputy Secretary of Defense
May 19, 1973

a dramatic rate, both in the U.S. and abroad (Figure 1). The reasons are:

- A growing population;
- An increasing per capita consumption; and
- An ever growing and more energy intensive economy.

Figure 1 shows that while the Nation's population is expected to grow by 50 percent between now and the turn of the century, our energy demand will double by 1990 and nearly triple by the year 2000. The key point is that energy consumption is growing faster than the population.

Figure 2 shows that in 1970, all but about 4 percent of our energy came from fossil fuels—and ¾ of this energy was used directly: in cars, furnaces and boilers. Looking at the lower portion, we see that by the year 2000 nuclear power may be supplying nearly ¼, and coal 1/7 of our needs. Some recent estimates indicate that coal may support up to ½ of our needs by the year 2000, with oil and gas decreasing proportionately. Nearly half of the projected 150 quadrillion British Thermal Units (BTUs) we use will go to electric power generation. As time goes on, we expect to shift even more to an electric economy, with scarce petroleum products going exclusively to the chemicals industry. Demand for energy is going up particularly fast in Europe, in Japan, and in the United States. What, then, about supply to meet this demand?

Energy Reserves

Though many of the most easily tapped reserves of oil, coal and natural gas have been exploited, there are vast reserves remaining in the ground. With presently known and recoverable reserves, we can easily meet our needs until the turn of the century and beyond. Our coal reserves alone are estimated to be adequate to

Rear Admiral Sonenshein, USN

meet our total energy needs for 300 years. Roughly a third of our U.S. oil now comes from abroad, and this could increase to 60 percent by the late 1980s. The security and economic implications of this heavy reliance on foreign oil have been widely publicized. What is not often said is that by blunting the growth of our demand on foreign sources, by tapping our offshore and Alaskan reserves, and by accelerating our efforts to develop processes which convert coal to oil and gas, we could virtually eliminate our dependence on fuel imports by 1990. The main point I want to leave with you is that we have the reserves of fossil fuels to get us through the century, if we make intelligent use of them, and that in the next century we can count on advanced energy sources to pick up the load if we continue and accelerate Research and Development (R&D) efforts.

Energy Costs

But let me caution you that there will be a price attached to meeting our energy needs. Recovery costs will increase. Environmental standards will have to be met. And the price we pay for fuel will continue to rise. The chart (Figure 3) shows the recent trend for crude oil prices. Fuel costs vary from 20 cents to 75 cents per million BTU in bulk. The consumer pays more than that of course. I can heat my house for a day on a million BTU and it costs me about $2. I can drive my car 120 miles for a million BTU and it costs $5. Within a few years, you and I may have to pay a lot more for our energy needs. The implications for each of us, and for DoD, is that we have to tighten our energy belts, to use only the energy that we really need.

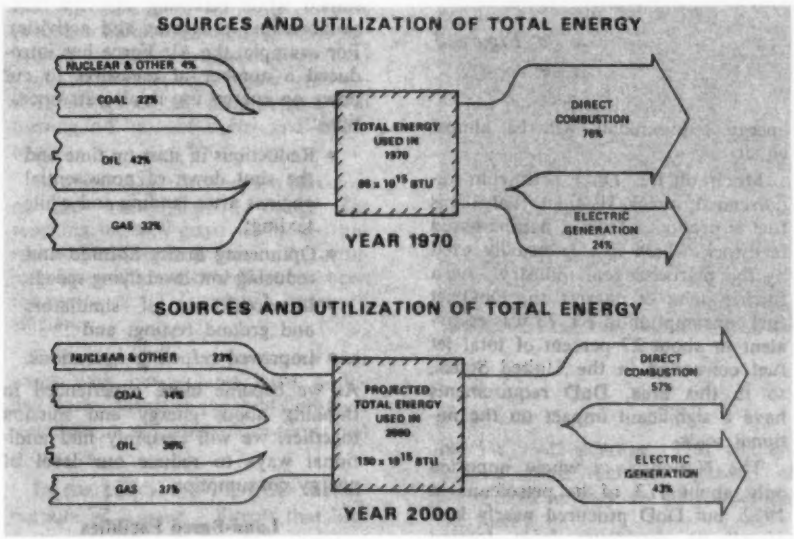

Figure 2

National Energy Problem

Before I go on to look at the impact of the energy problem on the DoD, let me leave you with four summary thoughts about the national energy situation:

- At the present rate of growth, the demand for energy will nearly double every 17 years. But we may be able to meet that demand for the foreseeable future, if we conserve, if we tap our fossil fuel reserves in the short term, and develop advanced sources in the longer term.
- During the next decade there may well be spot shortages of fuel and continued dependence on uncertain foreign sources. With prudent management of our resources, we should be able to meet our needs with domestic sources by 1990.
- The price we must pay for energy probably will increase rapidly, more than doubling in the next 10 years, as a result of increased extraction and environmental costs.
- Because of rising costs and immediate shortages of fuel, the Nation and our Department of Defense must learn to be more efficient in the way we use energy and to cut back on demand wherever possible.

Defense Energy Situation

In order to place the Department of Defense total energy consumption in proper context, it is useful to compare it with the total national energy consumption level. Figure 4 shows that the DoD consumes only 2.4 percent of all the energy used in the United States, and that petroleum accounts for nearly ¾ of that amount. Electricity accounts for about 17 percent of the total and most of it is purchased from public utilities. Gas and coal are only 7.2 and 3.5 percent of the total respectively.

The 650,000 barrels a day of petroleum used by the DoD accounts for over 3½ percent of the national usage (Figure 5). The Air Force consumes

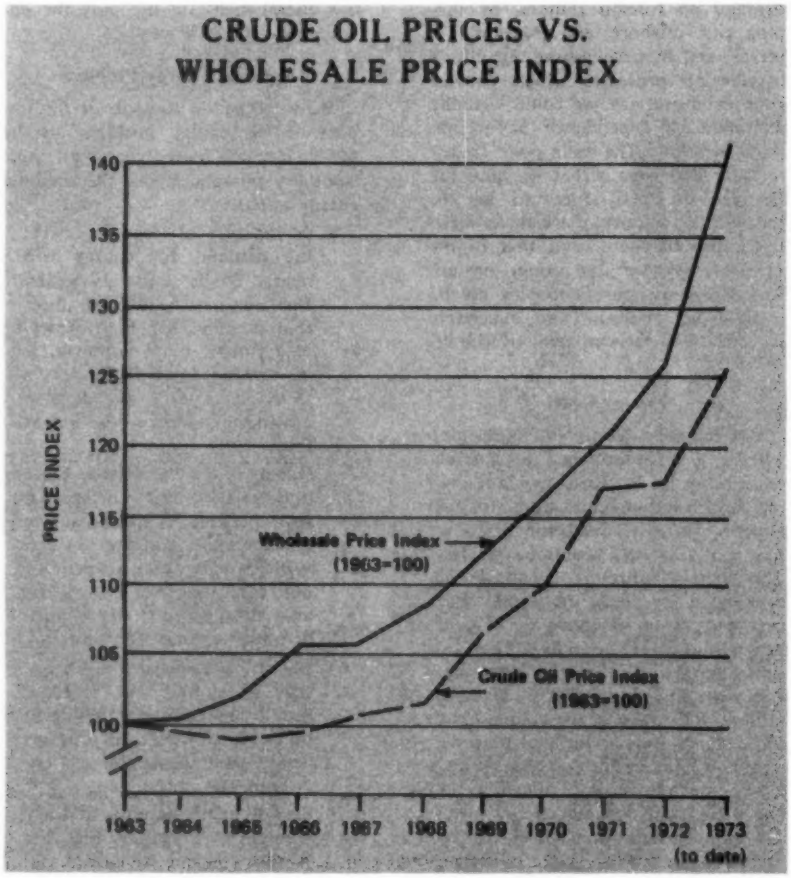

Figure 3

more than half of this amount, followed by the Navy with over a third. Though on a national scale DoD does not use a lot of energy, within the Federal Government it is by far the largest consumer, accounting for 85 percent of government energy use.

DoD Energy Use

Nearly half of the DoD energy requirement is consumed in aircraft operations, as shown in Figure 6, and this application accounts for almost 2/3 of the petroleum consumed. Installations will account for almost 40 percent of our energy consumption in FY 1974, and it is estimated that by 1979 this percentage will increase to the point that facilities and aircraft energy requirements will be almost equal.

Much of the DoD petroleum requirement is for JP-4 jet fuel. This fuel is produced from a naptha-based feedstock which is also heavily used by the petrochemical industry. As a further point of interest, the DoD jet fuel consumption in FY 73 was equivalent to about 27 percent of total jet fuel consumed in the United States, so in this area, DoD requirements have a significant impact on the national scale.

The Nation as a whole imported only about 1/3 of its petroleum in 1972, but DoD procured nearly half of all its petroleum from foreign sources, primarily for overseas use. These facts point out very clearly why petroleum is of such critical importance to DoD and why DoD requirements, although apparently minor from a national viewpoint, are particularly sensitive to the stability of foreign supplies of petroleum.

Energy and Mobile Systems

As we saw in Figure 6, mobile systems account for more than 60 percent of all the energy consumed by DoD and more than 85 percent of all the petroleum consumed. It is therefore essential that we devote our greatest attention to ways in which we can improve the efficiency of energy use in mobile systems while still accomplishing our mission.

It is well known that fuel consumption increases significantly with increases in cruise speed. This suggests possible fuel savings through operating at economical speeds. The argument that is given for reducing automobile speed on the highways for better gas mileage holds for aircraft, ships, and ground equipment as well, throughout the Department of Defense.

Similar logic compels us to minimize all possible usage of those vehicles while maintaining our total readiness. Each of the Services has already devised innovative ways to decrease the amount of energy consumed while retaining all vital mission-oriented programs and activities. For example, the Air Force has introduced a number of measures to cut down on energy use in aircraft operations:

- Reductions in start up time and the shut down of nonessential engines after landing and while taxiing;
- Optimizing cruise altitude and reducing low-level flying speeds;
- Increased use of simulators and ground testing; and
- Improved refueling operations.

As we become more experienced in thinking about energy and mission together, we will certainly find additional ways to reduce our level of energy consumption.

Land-Based Facilities

Next, let's turn to the second ma-

jor area of use, our land-based facilities. Because they are such significant users of energy, it is clear that facilities must be of major concern to an energy-conscious DoD. The Department has for a long time been very concerned with energy use on facilities, and has developed a series of guidelines and standards for conserving energy. In addition, all the Services have had a conservation program of sorts for a number of years now. A considerable amount of austerity in base maintenance, utilities and so forth has existed merely because this is the lowest priority in appropriations, and the first area to receive cuts.

On a more positive note, the DoD Construction Criteria Manual has been recently updated. Building specifications have been made much stricter and should lead to significant conservation of heating and electrical energy. The specifications on air conditioning units have been tightened, and only the most efficient types will even be considered for purchase. In this manual are also found operating instructions for heating, air conditioning and appliance units.

Following the lead of the General Services Administration (GSA), the Services have adopted energy saving practices not only in GSA buildings they are temporarily occupying but also in their own buildings. These practices involve a common sense approach to conservation through daylight room-cleaning, higher thermostat settings on air conditioners, and turning off unused lights and appliances.

A recent DoD instruction has formalized heating plant design for reaching the new goals set in environmental pollution standards. A fortuitous by-product of this effort has been the saving of BTUs through increased efficiency.

Recently, DoD has requested that bases with powerplants have a 30-day backup storage capability on their installations to avoid short-term fuel shortages.

In the policy area, a DoD memorandum of August 1 directs that life-cycle cost estimates for new construction use energy costs which are twice the FY 1972 average. This will ensure a more realistic appraisal of these costs as they are projected into the future.

Last, but not least, in recognition of the increasingly critical energy situation as regards petroleum and natural gas, the moratorium on boiler plant conversion from coal to oil or gas will continue in effect. It may even be necessary to convert some plants back to coal.

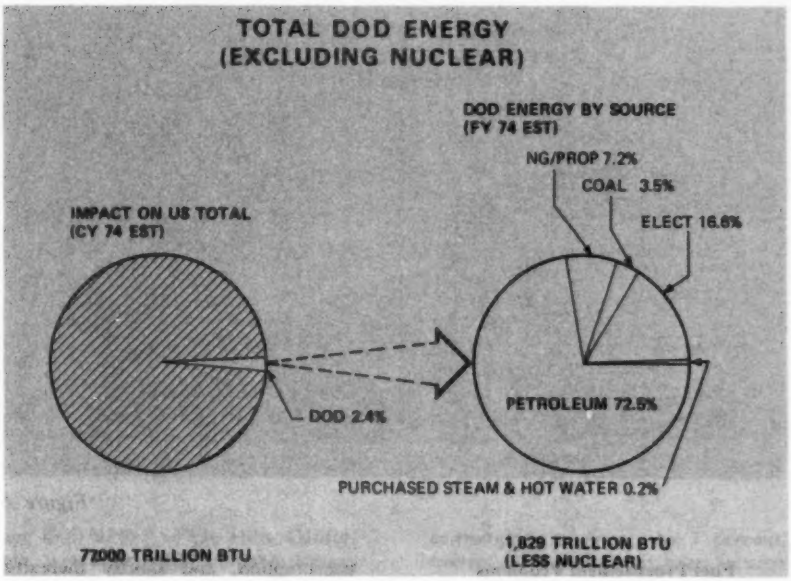

Figure 4

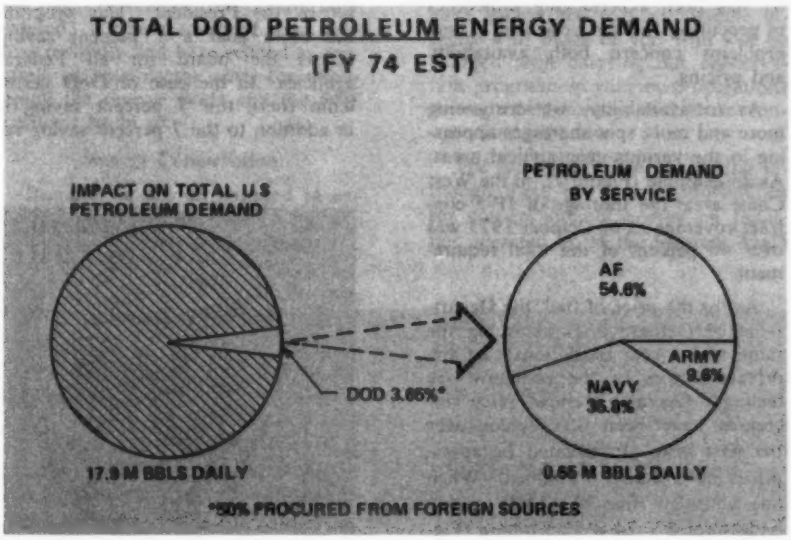

Figure 5

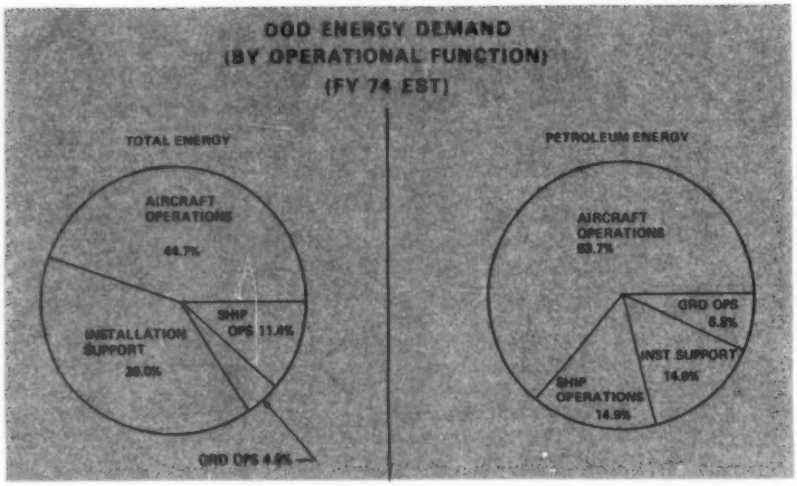

Figure 6

Fuel Procurement Problems

Now, a few words on our fuel procurement problems. For the past few months, the Defense Fuel Supply Center has been experiencing difficulties in procuring fuel for your use. These problems concern both availability and pricing.

As to availability, we are seeing more and more spot shortages appearing in the various geographical areas. As an example (Figure 7), in the West Coast area, the shortage of JP-5 contract coverage as of October 1973 was over 40 percent of the total requirement.

As for the price of fuel, the Department of Defense is experiencing the same major cost escalations that the private sectors of the economy are feeling. Overall average price increases have been 32 percent over the past year. In isolated instances, prices have actually doubled. When one considers that the DoD energy budget for FY 74 is $2.5 billion (Figure 8) and that over a 20 percent increase is projected for FY 75, it is clear that the impact of such large increases is truly staggering.

Federal Energy Program

In June, President Nixon launched a Federal program (see President's message, page 3) to reduce energy consumption, and shortly thereafter an Office of Energy Conservation was created in the Department of the Interior to coordinate all Federal and private efforts to meet the objectives set by the President. This program has as a goal a 7 percent saving across the board for all Federal agencies. In the case of DoD petroleum fuels, this 7 percent saving is in addition to the 7 percent saving resulting from the Vietnam drawdown. Thus, DoD petroleum usage should decrease by 14 percent. Deputy Secretary of Defense Clements (see message, page 4) has directed that this energy program be implemented with accurate feedback to measure our success. The DoD conservation effort is particularly important from the Federal Government point of view since DoD consumes 85 percent of all the energy used by Federal agencies.

Operational Readiness

The major challenge to the Department of Defense will be to effect this reduction without impairing the combat readiness of the various operational commands. Particularly in the case of aircraft, any reduction in the number of flying hours will have an effect on pilot proficiency unless some compensating action is taken. Many types of immediate action which can assist in saving fuel stocks are innovative in nature and can be instituted at the local level.

Defense Energy Task Group

In late September, the Assistant Secretary of Defense (Installations and Logistics) established the Defense Energy Task Group (DETG) to analyze the DoD energy problem and to

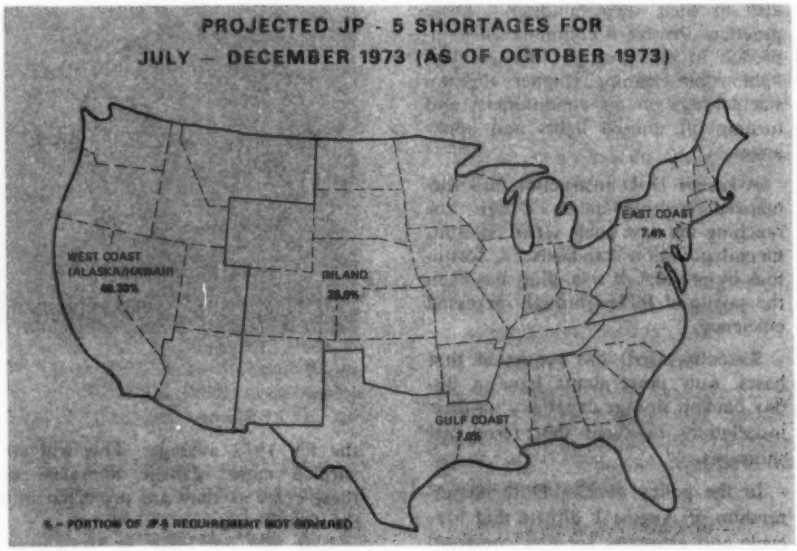
PROJECTED JP - 5 SHORTAGES FOR
JULY – DECEMBER 1973 (AS OF OCTOBER 1973)
WEST COAST (ALASKA/HAWAII) 40.39%
INLAND 28.6%
EAST COAST 7.6%
GULF COAST 7.0%
% = PORTION OF JP-5 REQUIREMENT NOT COVERED

Figure 7

coordinate and monitor the Service programs to achieve the 7 percent goal in energy conservation. Our immediate objective was to prepare a report to the Deputy Secretary of Defense by November 15, 1973.

To meet this objective, we divided our task group into teams which addressed the seven primary mission areas shown on Figure 9. We have completed our report now, and I would like to take this opportunity to tell you what some of our major activities and findings were.

Energy and Budget Impact

I have already reviewed with you the major results which have emerged from our study of energy requirements in DoD. Petroleum is our most important energy source and most of it is used in mobile system applications. We are convinced, based on our talks with Service representatives around the country, that we will be able to meet our 7 percent reduction goal in the use of petroleum products and that doing so will help us reduce the criticality of the current supply situation, particularly that for JP-4 and JP-5.

Storage and Distribution

This is a sensitive subject, as you know. In looking at fuel shortage and distribution, we examined current fuel storage capabilities and policy and suggested a number of changes in the light of our findings.

Fuel Standardization

In the area of fuel standardization, our analysis leads us to believe there are significant opportunities for decreasing the many types and grades of fuel, in the interest of simplicity and economy.

Navy Oil Reserves

There are four Naval Petroleum Reserves (NPRs) and two Naval Oil Shale Reserves (NOSRs) as shown in Figure 10, and the proven reserves in these areas are very large indeed, although perhaps less than adequate to meet maritime needs. As you know, the President has declared that to help ease the West Coast petroleum shortage that NPR-1 at Elk Hills, California, would be made available subject to Congressional approval. There are a number of statutory, policy and contingency factors which must be taken into account when alternative use of the naval petroleum reserves are considered. We have reviewed these factors carefully and have refined as precisely as possible the costs for developing the reserve fields and the time required to do so.

IMPACT OF RISING PRICES ON DOD ENERGY COST

$ IN MILLIONS

	CURRENT* FY74	DETG EST. FY74	EST FY75
PETROLEUM	2,010.5	2,058.7	2,469.0
NON-PETROLEUM	496.5	511.3	579.2
TOTAL	$2,507.0	$2,570.0	$3,048.2
% INCREASE		2.7%	21.6%

*INCLUDES 32% POL INCREASE

Figure 8

Energy Conservation

Because we are all engaged in exploring ways to meet the goal established by the President to reduce our consumption of energy by 7 percent, energy conservation has been an area of particularly great concern and interest to the DETG.

We have taken a broad look at energy conservation strategies and have endeavored to communicate directly with those of you who will be charged with carrying out conservation programs in your own operations through field surveys and these conservation seminars.

The survey team has found that although there are many opportunities for conservation of energy on facilities operated by all the Services, DoD

DEFENSE ENERGY TASK GROUP MISSION

- ENERGY REQUIREMENTS AND BUDGET IMPACT
- FUEL STORAGE AND DISTRIBUTION
- FUEL STANDARDIZATION
- NAVY PETROLEUM RESERVES
- ENERGY CONSERVATION
- ENERGY R&D
- ORGANIZATION FOR ENERGY MANAGEMENT

Figure 9

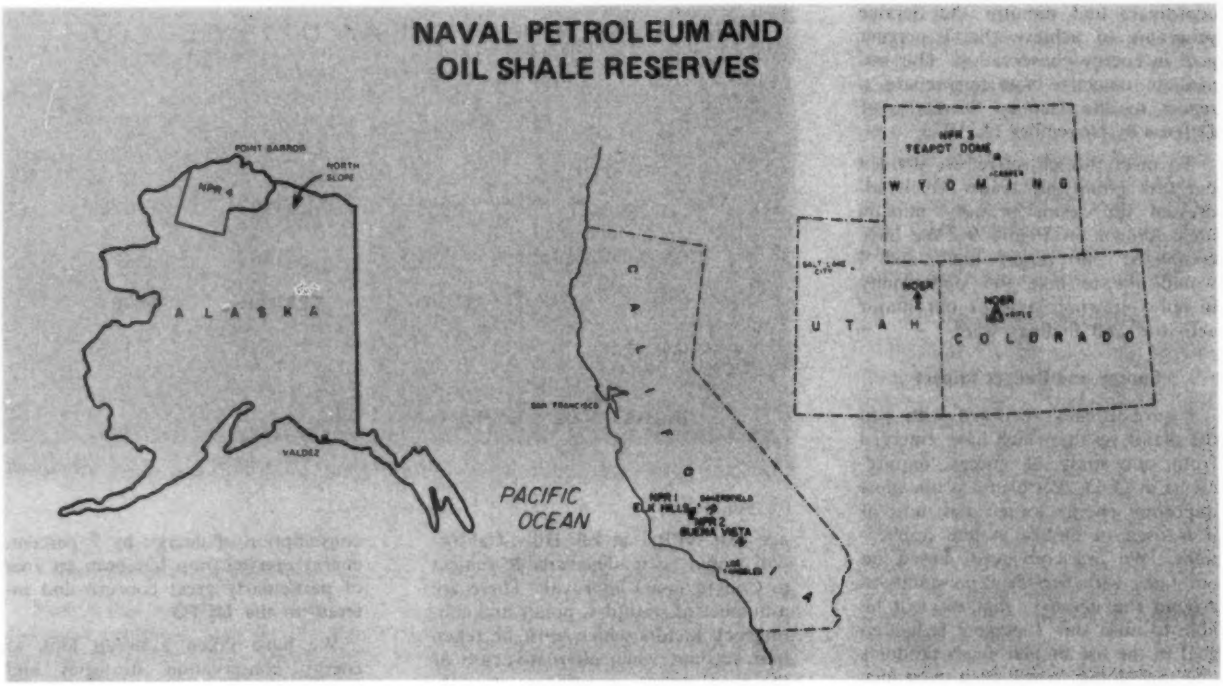

Figure 10

is leading most other Federal agencies in its programs to meet the 7 percent goal. However, we feel that to succeed in holding down our energy use in the future, awareness of the need to conserve must be increased and budgets must be made available to install the necessary energy efficient equipment and buildings. A study now being conducted by the Defense Advanced Research Projects Agency (ARPA) shows that a number of very straightforward conservation strategies employing state-of-the-art equipment could be implemented immediately and lead to significant savings both in energy and dollars. But these strategies require an initial investment in equipment, and it is not always easy to obtain the necessary dollars. Investment decisions based on life-cycle costs are still not the rule, but in the future they should be. In the conservation seminars, we have exchanged ideas on how to conserve energy by improving the efficiency of our mission-oriented operations without reducing their effectiveness. We feel it can be done and that our goals can be met, and more. We are passing the torch to you, the operational and installation commanders, to carry on this effort.

Energy R&D

In the area of R&D, a team was tasked to survey both internal DoD R&D energy-related research as well as that of other government and non-government agencies, and to develop a balanced set of goals and priorities for DoD support of R&D in the energy area. Earlier this fall, the Services were asked to submit R&D programs and priorities as part of the DoD input to the Atomic Energy Commission (AEC) long-range energy R&D planning activities now ongoing. These inputs, as well as the views of many knowledgeable R&D managers throughout the Defense establishment, were incorporated in the R&D team's results.

The two basic energy R&D goals established by the DETG as guides for selecting programs for Defense support are that DoD should:

- Develop new methods for providing DoD with the energy resources it needs both now and in the future, participating with other Federal agencies and private industry where that is in the best interests of the Nation; and
- Improve the efficiency with which energy is used in DoD applications and reduce energy consumption as much as possible without impairing operational effectiveness.

The priorities for DoD participation in energy R&D must, of course, be determined by:

- The amount and type of energy consumed in various DoD activities (see Figures 4, 5, and 6); and
- The relative efficiency with

which energy is consumed in those activities to accomplish missions.

In addition, DoD must determine whether it should take the lead role in supporting a specific R&D program or whether the lead more logically should be the responsibility of other Federal agencies or private industry, with DoD playing a supporting role. The DETG R&D study team has reviewed energy programs in light of these goals and priorities and has recommended areas which it feels DoD should emphasize in its energy R&D programs. Figure 11 shows a summary of those recommendations.

Energy Management

The organization and management team has focused its attention on several important questions:

- How is the DoD currently organized to deal with energy problems, ranging from fuel supplies to R&D, and is that organization effective?
- Is there an adequate system to allocate fuels and set priorities both in peacetime and in war?
- Do existing DoD instructions, memoranda, and directives provide complete guidance on handling energy matters or are further policy instructions required?

The DETG has recommended that several major changes be made in the organization of DoD to deal with energy, and has suggested that a management information system be developed and maintained to provide energy managers with ready access to the data and information they need to make decisions.

DETG Mission

With the submission of our report to ASD(I&L), the DETG has completed its assigned mission. The findings and recommendations of the Group, if adopted, will form the basis of a new coordinated Defense Energy Program which will help us get through our current energy problems and move into the future with confidence.

RECOMMENDED DOD ROLE IN ENERGY R&D

R&D PROGRAMS	Time Frame For Application		
	Near-Term (0-7 years)	Mid-Term (8-15 years)	Long-Term (> 15 years)
I. Improvements in Propulsion of Mobile Systems			
• Aircraft Engines	Lead	Lead	Participate
• Aircraft Engine Materials	Lead	Lead	Participate
• Ship Conventional Machinery	Participate	Participate	Participate
• Ship Nuclear Machinery (less reactors)	Lead	Lead	Lead
• Ship Superconducting Machinery	Lead	Participate	Monitor
• Land Vehicles—Diesel and Other Piston Engines	Participate	Participate	Monitor
• Land Vehicles—Turbine Engines	Participate	Participate	Monitor
• Land Vehicles—Transmissions	Participate	Participate	Monitor
II. Development of Alternative Fuel Systems			
• Synthetic Petroleum	Incentivize	Incentivize	Incentivize
• Direct Use of Coal	Monitor	Incentivize	Incentivize
• Hydrogen	Monitor	Monitor	Monitor
• Electrochemical	Monitor	Monitor	Monitor
III. Reduction in Energy Consumption at Bases and Facilities			
• Improved Insulating Materials	Incentivize	Monitor	Monitor
• Heat Recovery Techniques	Monitor	Monitor	Monitor
• Advanced Methods of Energy Storage and Distribution	Participate	Monitor	Monitor
• Total Energy Systems	Participate	Monitor	Monitor
• Advanced Power Plants	Monitor	Monitor	Monitor
IV. Development of Advanced Energy Sources			
• Solar	Monitor	Monitor	Monitor
• Geothermal	Monitor	Monitor	Monitor
• NUC Fusion	Monitor	Monitor	Monitor

Figure 11

Management Actions

Commanders' Checklist for Energy Conservation

1. Does your facility have a command-directed fuel conservation program with:
   - ☐ Chief
   - ☐ Publicity
   - ☐ Awards—Motivation
   - ☐ Directives—Regulations, etc.
2. What existing directives/instructions (local and higher headquarters) have been or are being implemented?
3. Are there control procedures to insure maximum utilization of each building?
   - ☐ Are utilities shut off in unoccupied buildings; also in unoccupied areas of active buildings?
   - ☐ How is this controlled?
   - ☐ By inspection or survey?
   - ☐ What is the square foot/person "load factor" of various areas?
4. Does your installation have an energy conservation goal?
   - ☐ Have specific milestones been established?
   - ☐ Have action-plans been developed to achieve milestones?
   - ☐ How is fuel conservation measured and reviewed?
   - ☐ Has responsibility for action-plan implementation been assigned to a specific individual?
5. Has the responsible person communicated action-plans to the widest possible range of command/organization/component personnel?
6. What is the trend of energy use of your installation?
   - ☐ Electricity
   - ☐ Fuel Oil
   - ☐ Gas
   - ☐ Other
7. Which are your large energy users/what percentage?
   - ☐ Power generation/utilities
   - ☐ Housing
   - ☐ Industrial
   - ☐ Administration
   - ☐ Training
   - ☐ Air conditioning
   - ☐ Flight operations
   - ☐ Vehicles
   - ☐ Ship operations
8. What has been the trend of energy costs?
   - ☐ Electricity
   - ☐ Fuel Oil
   - ☐ Gas
   - ☐ Other
9. Does your installation have a broad program to increase personnel awareness of the need for maximum energy conservation in your buildings and their homes?
10. Have you considered use of "in-house" publications, display of posters and stickers, inclusion as an item with the local speakers' bureau, or sponsoring an energy conservation day?
11. Have programs been designed for regional and other field activities?
12. Has consideration been given to designating one person for central control of energy usage in your buildings, including removal of unnecessary lights and improvement of temperature control?
    - ☐ Is an energy waste reporting system encouraged?
    - ☐ To whom would a person report a steam leak or street lighting on during the day?
13. Has assistance when needed been requested from higher headquarters, other Government agencies or utility companies to obtain checklists or an on-site checkup on equipment maintenance, efficient use of lights, and temperature control features?
14. Is starting time of workday advanced during summer to reduce energy required for air-conditioned space?
15. Is smoking prohibited in classrooms, conference rooms, and similar assembly areas to permit reduction of outside air requirements to reduce cooling and heating loads? (1/8 ventilation requirements)
16. How are large blocks of electrical loads, such as air field lighting, controlled?
17. Is there a contingency plan in effect in case of fuel shortages?
    - ☐ Interservice support, etc.?
    - ☐ What is it?
18. In addition to normal program, is facility cognizant of the Presidential program for FY 74, requiring a 7 percent further reduction in energy?
    - ☐ What action has been taken to implement it?
19. Can your installation gauge the impact on energy consumption of various energy conservation efforts?
    - ☐ For de-lamping
    - ☐ For temperature control
    - ☐ For daytime cleaning
    - ☐ For procuring smaller vehicles
    - ☐ For improved vehicle maintenance and utilization
20. The Federal Government is about to spend a large amount of money on energy research and development—where would you recommend this money be spent to help you conserve energy?
21. Do existing fiscal accounting procedures encourage conservation, i.e., what happens to money saved through conservation?
22. Recommendations/Problems
    - ☐ What guidance/policy would help you?
    - ☐ What specifically would you recommend be done to alleviate the energy problem?

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